REMARKS

Claims 1-84 are all the claims pending in the application.

The Examiner has rejected original claims 1 - 83 under either 35 U.S.C. §102 or 35 U.S.C. §103. The §102 rejections are based upon Troitski (for claims 1,7,22 and 27) or Tanabe (for claims 1,2,4,5,11,12,14,15,21,22,24,25,26,29,30, and 34). The §103 rejections are all based primarily upon Tanabe, taken with various subsidiary references cited for ancillary features. These rejections are respectfully traversed.

Turning first to Troitsky, this patent describes a technique which is capable of ablation, however, the technique relies on a defect being present in the material at the ablation site, which is obviously a very limiting issue. Thus, this patent cannot guide one of skill in the art regarding the ablation or machining of transparent materials which have no site-specific defects, such as crystalline materials, polymers, etc. Further, the pulse widths used in this reference are very long by the standards of the present invention, such that the machining mechanism is always solely heat-dependent. The shorter pulse is in the 10ns range, and the longer pulse is in the millisecond range.

The present invention, in contrast, discloses and claims ablation and machining using an effect which is not observable at the time scales of Troitsky. At the shorter time scales of the invention, for example, ablation can take place principally without heat, and without creating a heat affected area of the target. To this end, Applicants have amended the applicable independent claims to specify that the shorter pulses are in the picosecond or shorter (e.g., femtosecond) range. Accordingly, Troitsky is not believed relevant to these claims as amended,

nor to the claims which require selection of the second pulse's attributes according to the material modification or conditioning performed by the prior pulse.

Similar comments are in order regarding the Tanabe reference. Here, the pulse widths selected are those suitable for melting the material, e.g. 10 or 10's of nanoseconds in duration, and the invention is similarly distinguished. In addition, Tanabe does not disclose an ablation process, only a melting process, so there is no question but that only a heating mechanism is employed. While the invention also can use heat effects, it does so only by adding controllable heating affects via one pulse to ablation via another pulse which is principally without heat.

Inasmuch as the primary references employed by the Examiner operate on different time scales and cannot therefore achieve the ablation mechanisms of the invention, it is not believed necessary to discuss the subsidiary references except to point out that none of them would be sufficient to suggest to one of skill in the art to change the fundamental principles of operation of the primary references.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

/Richard Turner/
Richard C. Turner
Registration No. 29,710

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: August 21, 2006